Pirates Cove Beach, Rye

BEACH WATER QUALITY REPORT
SUMMER 2004

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NEW HAMPSHIRE DEPARTMENT OF Environmental Services

BACKGROUND

The New Hampshire Department of Environmental Services (NHDES) has operated its Public Beach Inspection Program, or Beach Program, for over twenty years. Coastal beach monitoring began in 1989 and has continued through the present. NHDES recognizes the threat to public health at public beaches and continues to monitor public beaches throughout the state for the presence of pathogenic organisms. Coastal beaches are monitored for the presence of the fecal bacteria Enterococci. These fecal bacteria are present in the intestines of warm-blooded animals including humans. Fecal bacteria, when present in high concentrations and ingested, can commonly cause gastrointestinal illnesses such as nausea, vomiting and diarrhea. They are also known as indicator organisms, meaning their presence in water may indicate the presence of other potentially pathogenic organisms.

In October of 2000, the United States Environmental Protection Agency (EPA) signed into law the Beaches Environmental Assessment and Coastal Health (BEACH) Act. The BEACH Act is an amendment to the Clean Water Act that authorizes the EPA to award grants to eligible states. The purpose of the BEACH Act is to reduce the risk of disease to users of the nation's recreational waters. BEACH Act grants provide support for development and implementation of monitoring and notification programs that help protect the public from exposure to pathogenic microorganisms in coastal recreation waters.

NHDES received grant funding in 2002 to develop and implement a beach monitoring and notification program consistent with EPA's performance criteria requirements published in the *National Beach Guidance and Required Performance Criteria for Grants* document (www.epa.gov/waterscience/beaches/grants). NHDES has successfully met all requirements and continues to expand the monitoring and notification program. In 2002, only 9 coastal beaches were monitored, in 2003 fifteen coastal beaches and in 2004 sixteen coastal beach were monitored on a routine basis.

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Beach Description

Pirates Cove Beach is a soft sand beach whose total length is 3,110 feet. The beach is frequently used by residents and vacationers for various recreational activities. There are two access points to the beach area from the parking areas off Route 1A. Lifeguards are present throughout the summer and sanitary facilities are available.

Waterfowl are frequently observed at the beach. The most common being gulls and terns, although generally they are observed in small numbers. Dogs are also observed on the beach and dog feces were observed on a few occasions this season. There are restrictions for dogs during beach hours however they are permitted prior to and after normal beach hours.

Below is a brief description of the sampling stations at Pirates Cove Beach, Rye. The stations are pictured in Figure 1.

- The left sample station is accessed from Wallis Sands State Park. Cross the rock wall separating Wallis Sands and Pirates Cove on the north end. The sample is collected three houses south of the wall.

- The center sample station is accessed from the main beach entrance. Park in the main parking lot for the beach off of Route 1A next to the Rye Surf Club. Walk straight out and collect sample.

- The right sample station is accessed from a small beach access area off of Route 1A. Park at the access located across from Petey's Restaurant and immediately after a small bridge. Enter the beach, turn north and walk to the sixth house. Collect the sample in front of the house.

- The Parson's Creek sample is accessed via the parking area used for the right sample. Walk to the beach and turn south towards Parson's Creek. Samples are usually collected only during low tide because at high tide the water may be flowing upstream.

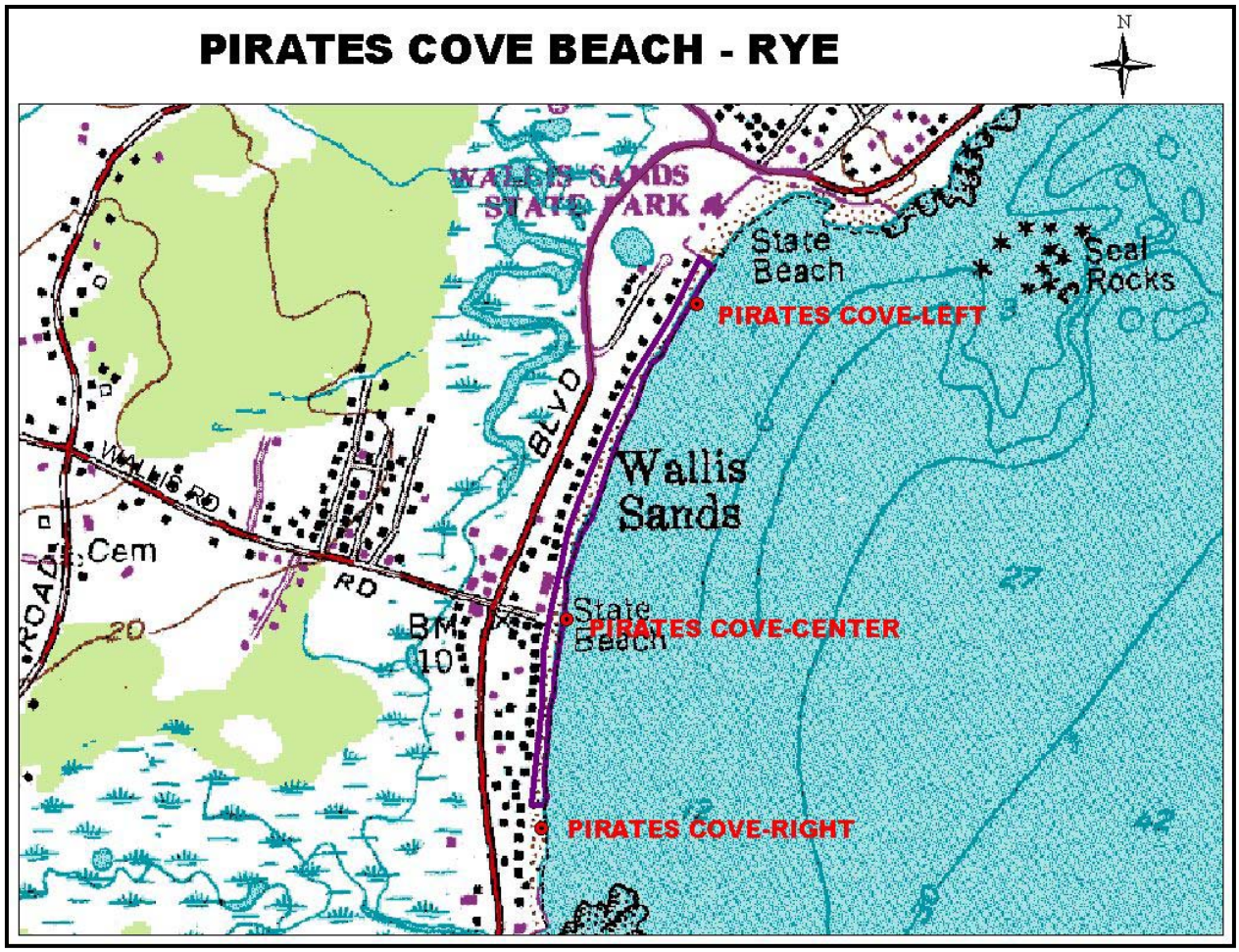

Figure 1. Map of Pirates Cove Beach

Tier Status and Sampling Frequency

The Beach Program developed a risk-based beach evaluation process and tiered monitoring approach and implemented this approach during the 2003 beach season. Beach evaluations are conducted annually to determine potential health threats to the public. Evaluations are based on several criteria in three main categories: beach history, microbial pathogen sources, and beach use. Based on these criteria, beaches are assigned either a Tier I or Tier II status. Tier I are high priority beaches that have an increased potential to affect public health while Tier II are low priority beaches that have less potential to affect public health. Beach sample frequency is based on the Tier statuses; Tier I beaches are sampled weekly and Tier II beaches are sampled every other week.

Pirates Cove Beach was categorized as a Tier I beach based on the Beach Program's Risk-Based Evaluation ranking system. This ranking indicates that the beach is frequently used by the public and there are potential pollution sources present that may negatively affect public health. The

Pirates Cove Beach Tier I ranking has remained in place since the ranking system was implemented.

Water Quality

Beaches are monitored to ensure compliance with State Water Quality Standards. Marine waters are analyzed for the presence of the fecal bacteria Enterococci. Enterococci are known as indicator organisms, meaning their presence may indicate the presence of pathogenic bacteria. The state standard for Enterococci at public beaches is 104 counts/100 mL in one sample, or a geometric mean of 35 counts/100 mL in three samples collected over sixty days. Standard exceedances require the issuance and posting of a beach advisory. Beach advisories remain in effect until subsequent beach sampling indicates safe water quality conditions.

The number of samples collected at each beach is determined by the beach length. Beaches less than 100 feet in length are sampled at left and right locations 1/3 of the distance from either end of the beach. Beaches greater than 100 feet in length are bracketed into thirds and sampled at left, center and right locations. Routine sample collection may be enhanced by sampling known or suspected pollution sources to the beach area. Also, storm event sampling may be conducted at beaches where wet-weather events are expected to affect beach water quality.

The 2004 sampling season began June 1st. June was cooler and drier than normal, July was cooler and wetter than normal, while August was warmer and wetter than normal. The sampling season encompassed 108 days, of which precipitation was recorded on 42 days (based on Seabrook WWTF recorded precipitation). Twenty beach days (normal beach hours are considered 9:00 a.m. to 5:00 p.m.) were directly affected by precipitation.

Pirates Cove Beach was sampled once per week from June 1st through Labor Day. Three samples were collected at left, center and right stations (Figure 1). There were a total of 15 routine inspections performed and 45 samples collected at the beach and 13 samples collected at Parson's Creek during the 2004 season.

Table 1 includes the Enterococci data from each sampling event in 2004. Overall, the Enterococci levels were low at the Pirates Cove Beach stations. No advisories were issued for this beach in 2004.

Table 1. Pirates Cove Beach Enterococci Data 2004

Sample Date	Station Name	Results (counts per 100 mL)
04/15/2004	Pirates Cove – Left	NO SAMPLE
	Pirates Cove – Center	NO SAMPLE
	Pirates Cove – Right	<10
06/02/2004	Pirates Cove – Left	60
	Pirates Cove – Center	40
	Pirates Cove – Right	10
06/08/2004	Pirates Cove – Left	<10
	Pirates Cove – Center	<10
	Pirates Cove – Right	20
06/16/2004	Pirates Cove – Left	<10
	Pirates Cove – Center	<10
	Pirates Cove – Right	<10
06/22/2004	Pirates Cove – Left	<10
	Pirates Cove – Center	<10
	Pirates Cove – Right	30
06/30/2004	Pirates Cove – Left	<10
	Pirates Cove – Center	<10
	Pirates Cove – Right	<10
07/06/2004	Pirates Cove – Left	<10
	Pirates Cove – Center	10
	Pirates Cove – Right	60
07/12/2004	Pirates Cove – Left	<10
	Pirates Cove – Center	<10
	Pirates Cove – Right	<10
07/20/2004	Pirates Cove – Left	<10
	Pirates Cove – Center	<10
	Pirates Cove – Right	<10
07/28/2004	Pirates Cove – Left	<10
	Pirates Cove – Center	<10
	Pirates Cove – Right	<10
08/02/2004	Pirates Cove – Left	10
	Pirates Cove – Center	<10
	Pirates Cove – Right	<10
08/11/2004	Pirates Cove – Left	<10
	Pirates Cove – Center	<10
	Pirates Cove – Right	<10
08/16/2004	Pirates Cove – Left	<10
	Pirates Cove – Center	<10
	Pirates Cove – Right	<10
08/24/2004	Pirates Cove – Left	<10
	Pirates Cove – Center	<10
	Pirates Cove – Right	10
08/31/2004	Pirates Cove – Left	10
	Pirates Cove – Center	<10
	Pirates Cove – Right	80

Enterococci levels at Parson's Creek were elevated on several occasions this season (Table 2 and Figure 3). Parson's Creek is a known pollution source to the Atlantic Coast. The Parson's Creek discharge has caused the immediate area to be closed to shellfish harvesting by the DES' Shellfish Program. Parson's Creek may be responsible for the slightly elevated Enterococci counts at the right sample station on July 6, 2004 and August 31, 2004.

DES has conducted two studies on Parson's Creek to identify the sources of bacterial pollution. The studies employed the microbial source tracking technology called "ribotyping". The technology results in source specific identification such as humans, dog, or geese fecal sources. Both studies indicate that wild animals and humans are significant sources of bacterial pollution. The human sources are a result of suspected failing septic systems. The Watershed Assistance Section, Coastal Investigations, is focusing on the identification and remediation of failing septic systems in the Parson's Creek watershed. With the identification and remediation of failing septic systems, DES hopes to significantly reduce bacterial loading to Parson's Creek.

Table 2. Parson's Creek Enterococci Data 2004

Sample Date	Results (counts per 100 mL)
04/15/2004	<10
06/08/2004	40
06/16/2004	<10
06/22/2004	260
06/30/2004	10
07/06/2004	420
07/12/2004	10
07/20/2004	310
07/28/2004	120
08/02/2004	10
08/11/2004	<10
08/16/2004	210
08/24/2004	820

Figure 2 depicts the Enterococci data in relation to the state standard for coastal beaches.

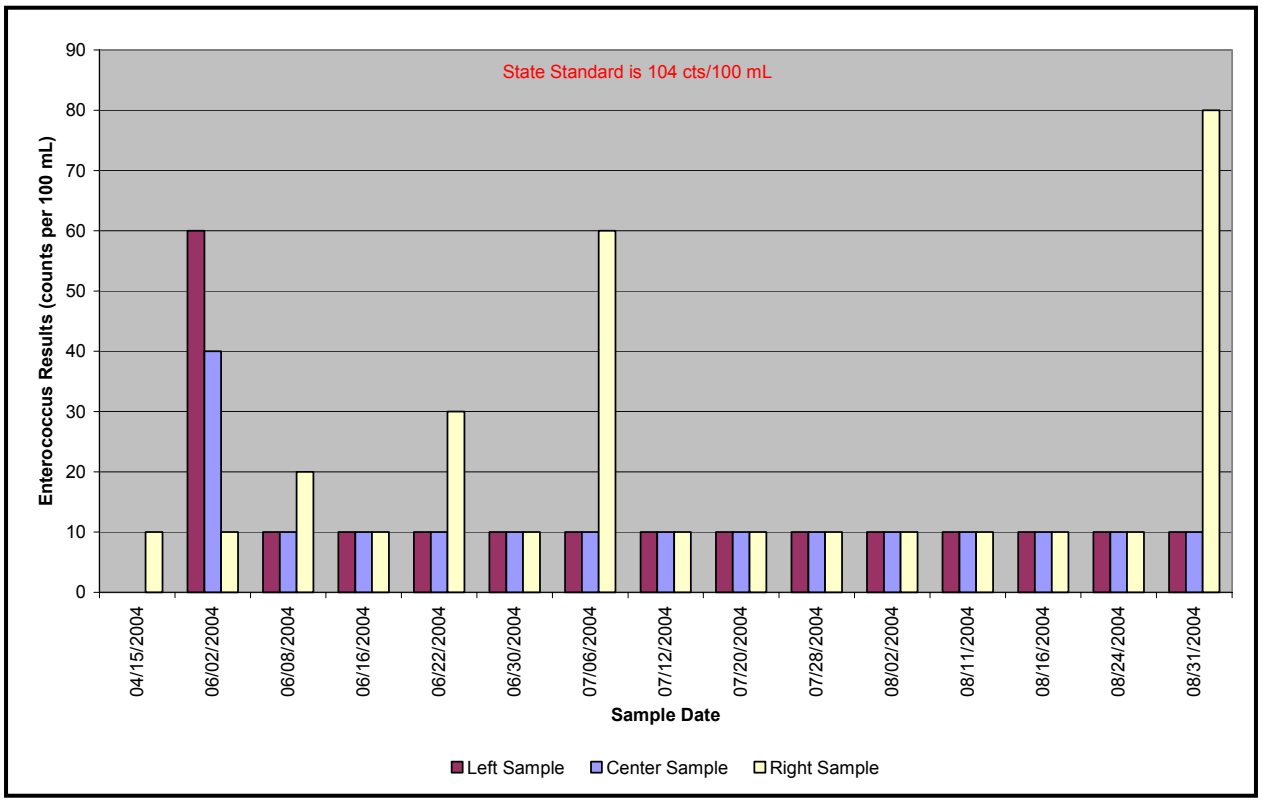

Figure 2. Pirates Cove Beach Enterococci Data 2004

Figure 3 depicts Enterococci data from Parson's Creek, which discharges at the southern end of the beach near the right sample.

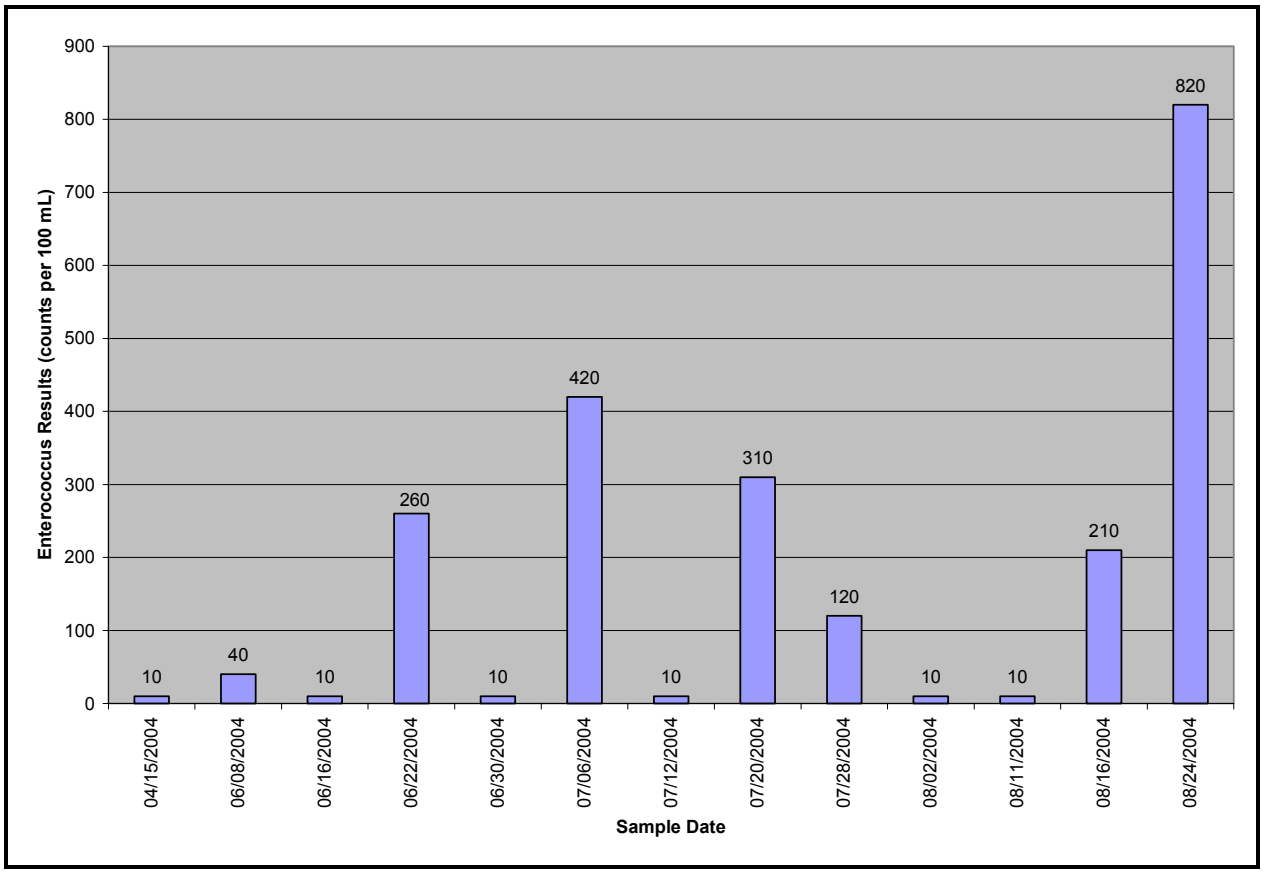

Figure 3. Parson's Creek Enterococci Data 2004

The Beach Program staff analyzed whether a relationship exists between elevated Enterococci levels and precipitation at Pirates Cove Beach. Analyses of the data indicate no direct correlation. DES will continue to monitor precipitation data and Enterococci levels. Precipitation often causes elevated bacteria levels due to runoff in the watershed.

Areas of Concern

The prime area of concern at Pirate's Cove Beach is the potentially negative impact from Parson's Creek. Parson's Creek was identified as a significant pollution source to the Atlantic Coast, transporting and discharging bacteria laden waters to the ocean. We have not yet measured a major impact from the creek but, with increased sampling efforts, we may identify negative impacts in the future. DES is actively addressing the bacteria loading problem in Parson's Creek. Future activities may significantly decrease bacterial loading to Parson's Creek and the right end of Pirate's Cove Beach.

Until DES has addressed the bacteria threats to Parson's Creek, this area should not be used for recreation. On one occasion this season, children were observed playing in the creek. Lifeguards received complaints of the creek turning orange and green in color. There is frequently a noticeable odor from the creek.

Thoughts for the Future

- The Town should consider restricting public access to the Parson's Creek discharge. The area on either side of the discharge should be roped off to discourage children from playing in the water. Also, signs should be posted to indicate the area may be unsafe for water contact due to potentially elevated levels of bacteria.

- The Town of Rye, local businesses, or school group should consider joining NHDES' Adopt-a-Beach Program. The program would consist of beach clean-ups and water quality monitoring. DES would conduct training sessions and participate in education and outreach activities for the community. If you are interested, please contact Sara Sumner at 603-271-8803 or ssumner@des.state.nh.us.

- The Beach Program applauds the Town for providing trash receptacles for the public to dispose of waste. The Beach Program has received complaints in the past about the lack of trash receptacles at the beach. Trash receptacles will help reduce litter along the beach making the area more aesthetically pleasing to the public. It may also keep marine waterfowl off the beach, reducing the amount potential fecal contamination.